a second conversion section connected between said second terminal and said logic section to convert signals transmitted and received to and from said logic section and said optical-fiber, UTP or stand-alone cable.--

--41. The integrated circuit of Claim 40, wherein said serial data bus data-communication system is a system in accordance with the IEEE 1394 high speed serial bus standard, said serial bus cable is an IEEE 1394 cable, and said physical-layer protocol logic section is an IEEE 1394 physical-layer protocol logic section.--

REMARKS

This preliminary amendment replaces original Claims 1-14 with new Claims 15-41. All claims as presented herein are believed patentably distinguishable from the prior art of record in the parent of this application (S/N 08/943,611), for which a Notice of Allowance has been issued. The present amendment also amends the specification to correct typographical and grammatical errors. Note that a proposed drawing change is attached hereto to correct inadvertent errors as was done in the parent application.

New independent Claim 15 is similar in scope to Claim 2 of the parent application as it stood prior to the Final Office Action of July 19, 2000. In that Office Action, Claim 2 was rejected under 35 U.S.C. 103(a) over U.S. Patent No. 5,808,660 ("Sekine") in view of U.S. Patent No. 5,784,648 ("Duckwall"). The Examiner reasoned that Sekine discloses a system that

transmits data per the 1394 standard that supports three data rates which can be selected, and that video data is transmitted to different passengers in time divisions. Apparently, the Examiner had concluded that in the Sekine system, data could be transmitted in one time slot in the TDM system at a slow speed and in another time slot at a high speed.

New Claim 15, however, recites the following:

> " ...allocating periodic bit regions which are not used at a low data rate to transfer data in a data packet to be transmitted, on a data stream by transmitting data bits at said low data rate only in predetermined portions of periodic intervals of said data stream, *without transmitting any data during the allocated periodic bit regions*, so as to facilitate a change in data communication to communication at higher data rates defined by the IEEE 1394 standard." (emphasis added)

By way of example only to explain some of the principles of Claim 15, reference is made to FIGS. 1A to 1D of the application where it is seen that data is transmitted at a low speed in FIG. 1B in the non-shaded time slots, while no data is transmitted in the shaded regions of FIG. 1B. Thus, the shaded regions are examples of allocated periodic bit regions which are not used at a low data rate to transmit data. It is readily apparent that this type of bit region allocation is neither taught nor suggested by Sekine.

The Sekine system does not disclose or suggest the above-quoted aspects of the present invention. As best understood by the Applicants' representative, when the Sekine system operates in the TDM mode, only one user has control of the bus for the duration of a predetermined length bit steam. That is, the bus control would not change hands on a bit by bit or a byte by byte basis: instead, it is believed that each user would control the bus for a relatively

long time interval. Now, if one user communicated at slow speeds during one portion of the periodic TDM interval and another user communicated at higher speeds during another portion of the interval, this technique would not be equivalent to the above-quoted aspect of the Applicants' invention. That is, Sekine does not teach or suggest transmitting data bits at a low data rate only in predetermined portions of periodic intervals of the data stream, *without transmitting any data during the allocated periodic bit regions* (i.e., in Sekine's case, during the periodic time intervals presumably allocated for high speed data transmission).

Duckwell was relied upon for teaching the use of a UTP cable, and does not cure the deficiencies of Sekine with respect to Claim 15.

Accordingly, new Claim 15 and the claims depending therefrom are patentable over any proper combination of Sekine and Duckwell. New independent Claim 20 and its dependent claims are patentable over these references for analogous reasons.

New independent Claims 21, 24, 32 and 40 recite novel features not previously presented in the parent of this application. Each of these claims, as well as the claims depending therefrom, are believed to be patentable over the prior art of record.

Conclusion

In view of the foregoing, entry of this amendment, and the allowance of this application with Claims 15-41 are respectfully requested.

The above statements concerning the disclosure in the cited references represent the

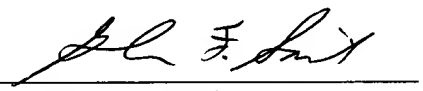
present opinion of Applicants' representative and, in the event that the Examiner disagrees, Applicants' representative respectfully requests the Examiner to specifically indicate those portions of the respective references providing the basis for a contrary view.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version With Markings to Show Changes Made."

In the event that additional cooperation in this case may be helpful to complete its prosecution, the Examiner is cordially invited to contact Applicants' representative at the telephone number written below.

Respectfully submitted,

FROMMER LAWRENCE & HAUG LLP
Attorneys for Applicants

By 

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Version With Markings to Show Changes Made

In the Specification:

The paragraph beginning at page 6, line 6, has been amended as follows:

--Figs. 5A and 5B are [charts] diagrams showing a method for realizing a Tp bias when [an] a 1394 cable is used and an example of a method for realizing a Tp bias according to the present invention, respectively.--

The paragraph beginning at page 8, line 10, has been amended as follows:

--Next, a method for transmitting data rates in the 1394 communication will be described. As shown in Figs. 2A to 2C, according to the 1394 [cable] standard, data rates of S100, S200 and S400 are transmitted by setting the levels of TpB and TpB*, as bias signals which flow in the cable for transmitting the strobe signal, to mutually different predetermined levels during e.g., 100 to 120 nanoseconds.--

The paragraph beginning at page 8, line 17, has been amended as follows:

--In addition, according to the 1394 communication using the optical-fiber cable, of the present invention, the UTP cable or the STP cable, the data rates are transmitted based on the number of times [for sending the control systems] certain control symbols are sent. Fig. 4 shows a table of symbols used in the present invention. In the 1394 communication using the

optical-fiber cable, the UTP cable or the STP cable, data of the 1394 communication is transmitted by 4B/5B codes. The 4B/5B codes are a coding method standard used in digital data communication, and are also used in 100-Mbps Ethernet, FDDI and so forth. Each symbol employed as a code has a different use depending on the communication method using the symbol. [Differently from this one, there are many] In any event, aside from the 4B/5B coding method, there are other types of coding methods, which will be described below.--

The paragraph beginning at page 9, line 6, has been amended as follows:

--The 4B/5B codes have sixteen types of control symbols. The symbol "JK" is transmitted to the prefix area of a 1394 packet, and for example, the symbol "S" is used for notification of the data rate. At this time the data rate is transmitted based on the number of times [for sending] that the symbol "S" [to] is inserted (sent) in the prefix area of the 1394 packet. For instance, as shown in Fig. 3, no [sending] insertion of the symbol "S" means S100, the [sending once] insertion of one "S" means S200, [and the sending] and the insertion of two "S"s [twice] means S400. Even if a faster data rate is added to the 1394 standard in the future, this method is capable of coping with such a case by increasing the number of times [for sending the symbol "S"] the symbol "S" is inserted. Instead of the recognition with the umber of times for sending the symbol "S", the case of sending another predetermined symbol, e.g., the symbol "R" may be recognized as S400.--

The paragraph beginning at page 9, line 21, has been amended as follows:

--Although the number of the symbols "JK" in the prefix region differs depending on each data rate, it is preferable to insert the symbol "S" used for notification of the data rate in the first half as [so] long as circumstances permit. This is because it is preferable that data-rate information be recognized as early as possible. The symbol "JK" must be initially sent. The reason is that symbol synchronization needs to be performed as described above.--

The paragraph beginning at page 12, line 17, has been amended as follows:

--A physical-layer control LSI [1] 41 shown in Fig. 6 is adapted for the UTP or STP cable. The physical-layer control LSI [1] 41 is provided with a port 14 to which a socket 2 of a 1394 cable 5 is connected, and a port 18 to which a connector 3 of a UTP or STP cable (hereinafter referred to as "UTP/STP cable") is connected. The physical-layer control LSI [1] 41 includes circuits for performing the 1394 standard process, and circuits for performing a process for the above-described UTP or STP transmission, which correspond to the two ports 14 and 18.--

The paragraph beginning at page 13, line 2, has been amended as follows:

--In the physical-layer control LSI [1] 41 there is provided a 1394 physical-layer protocol logic 11. The 1394 physical-layer protocol logic 11 executes bus initializing, arbitration, and the various processes described with reference to Figs. 1A-1D to Figs. 5A and

5B.--

The paragraph beginning at page 13, line 16, has been amended as follows:

--A 4B/5B conversion circuit 15 for performing the 4B/5B conversion of the sending data and the 5B/4B conversion of the received data is also connected to the 1394 physical-layer protocol logic 11. An MLT-3 circuit 16 for performing the MLT (multilevel transmission)-3 coding of the sending data and the MLT-3 reverse conversion of the received data is connected to the 4B/5B conversion circuit 15, and an analog circuit 17 for performing the adjustment of sending/received-signal level and so forth is connected thereto. The analog circuit 17 is connected to the port 18, and the UTP/STP connector 3 is connected to the port 18 via an insulating transformer 4. The MLT-3 circuit 16 performs voltage-level conversion based on three-valued logic, and gives a level change when bit "1" is input. The physical-layer control LSI [1] 41 may consist of a single integrated circuit. However, a portion shown by a dotted line in Fig. 6 may consist of another integrated circuit. Practically, it is possible to [built] build the insulating transformer 4 into the UTP/STP connector 3.--

The paragraph beginning at page 15, line 3, has been amended as follows:

--A physical-layer control LSI [41] 51 shown in Fig. 8 is adapted for the UTP or STP cable, and the POF cable. The physical-layer control LSI [41] 51 is provided with a port 14 to which a socket 2 of a 1394 cable is connected, and a port 21 to which both the UTP or STP

cable and the POF cable are connected. The physical-layer control LSI [41] 51 includes an MLT-3 circuit 16 used for connection to the UTP or STP cable, and an NRZI coding circuit 20 used for connection to the POF cable, and further includes a connector detector 22 for [connecting] detecting the type of connector connected to the port 21, and first and second switches SW1 and SW2 which are controlled by the output of the connector detector 22. When the UTP or STP cable is connected to the port 21, both the first and second switches SW1 and SW2 are switched to the MLT-3 circuit 16. When the POF cable is connected to the port 21, both the first and second switches SW1 and SW2 are switched to the NRZI coding circuit 20.--

The paragraph beginning at page 15, line 20, has been amended as follows:

--The physical-layer control LSIs [1, 31 and 41] 41, 31 and 51 according to the present invention have the foregoing structures. Thus, when the 1394 socket 2 is connected to the port 14, the ON condition of the bias signal is transmitted by fixing TpA and TpA* at the high level as shown in Fig. 5A, and the data rate is transmitted based on the levels of TpB and TpB* as shown in Figs. 2A to 2C.--

In the Claims:

Claims 1-14 have been canceled and replaced by Claims 15-41.